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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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8791	7590	11/14/2005	EXAMINER	
BLAKELY SOKOLOFF TAYLOR & ZAFMAN			AHMED, SALMAN	
12400 WILSHIRE BOULEVARD				
SEVENTH FLOOR			ART UNIT	PAPER NUMBER
LOS ANGELES, CA 90025-1030			2666	

DATE MAILED: 11/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/967,174	GINIPALLI ET AL.	
	Examiner	Art Unit	
	Salman Ahmed	2666	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 12 October 2005.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) _____ is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-3,5,6,8-13,15-25,29-31 and 33-35 is/are rejected.
 7) Claim(s) 4,7,14,26-28,32,36 is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 27 September 2001 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments see pages 13-14 of the Remarks section, filed 10/12/2005, with respect to the rejection of claims 5, 12, 20 and 24 previously under 35 U.S.C. 102(e), currently under 35 U.S.C. 103(a) have been fully considered but they are not persuasive. Applicant argues that the Hama reference describes an edge router structure. Examiner agrees with this assertion. However, the present claim language is broad and in view of the broadest reasonable interpretation of this language, as indicated in the previous office action, the claim language fails to mention LSR or LSP. The claim language does not distinguish the invention as a LSR.
2. Applicant's arguments, see page 14 of the Remarks section, filed 10/12/2005, with respect to the rejection of claims 12, 13 and 16 previously under 35 U.S.C. 102(e), currently under 35 U.S.C. 103(a) have been fully considered but they are not persuasive. Applicant argues that applicant relies on the patentability of the routing functionality as claimed and implemented by a computer readable medium to traverse the rejection. However, examiner respectfully disagrees with this assertion for the reasons mentioned in the rejection of the said claims.
3. Applicant's arguments, see page 14 of the Remarks section, filed 10/12/2005, with respect to the rejection of claim 20 previously under 35 U.S.C. 102(e), currently under 35 U.S.C. 103(a) have been fully considered but they are not persuasive. Applicant argues that applicant relies on the patentability of the routing functionality as claimed and implemented by a processor coupled to a memory to traverse the rejection. However, examiner respectfully disagrees with this assertion for the reasons mentioned in the rejection of the said claims.

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4. Applicant's arguments, see page 14 of the Remarks section, filed 10/12/2005, with respect to the rejection of claims 6 and 13 previously under 35 U.S.C. 102(e), currently under 35 U.S.C. 103(a) have been fully considered but they are not persuasive. Applicant argues that the claim is a specific method of adjusting the structure of a VPN by using a GID table, which is entirely unlike which is taught by Hama. However, examiner respectfully disagrees with this assertion. The present claim language is broad and in view of the broadest reasonable interpretation of this language, as indicated in the previous office action, Hama teaches the structure of a VPN changes from time to time by being enlarged or otherwise modified by the policy of the enterprise. This makes it necessary to update the VPN tables in conformity with the change in VPN structure. FIGS. 15A and 15B are diagrams useful in describing updating in a case where the user router communicates with another user router.

5. Applicant's arguments, see pages 15-18 of the Remarks section, filed 10/12/2005, with respect to the rejection of claims 1, 2, 3, 21, 25: 26, 27, 28, 29, 30, 31, 33, 34 and 35 under 35 U.S.C. 103(a) have been fully considered but they are not persuasive. Applicant argues that the Thang has a filing date of 02/12/2002 which is after applicant's filing date 09/27/2001. Applicant points out Thang has the benefit of 02/13/2001 filing date of provisional application 60/268,080. Examiner respectfully states that the provisional application properly supports the subject matter relied upon to make the rejection in compliance with 35 U.S.C. 112, first paragraph. MPEP 2136.03.

6. In regards to claims 1, 29 and 33, Applicant argues that the Hama reference describes an edge router structure. Examiner agrees with this assertion. However, the present claim language is broad and in view of the broadest reasonable interpretation of this language, as indicated in the

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previous office action, the claim language fails to mention LSR or LSP. The claim language does not distinguish the invention as a LSR. Applicant argues swapping labels from a packet is entirely unlike the claimed remapping. However, examiner respectfully disagrees with this assertion. The present claim language is broad and in view of the broadest reasonable interpretation of this language, as indicated in the previous office action, Examiner respectfully points out that in MPLS routing when packets traverse from LSR to LSR label swapping do take place. Examiner respectfully disagrees with the Applicant that swapping labels from a packet is entirely unlike the claimed remapping.

7. In regards to claims 2, 3, 21, 25, 30, 31, 34 and 35 Applicant argues that the claims should be allowed based on the patentability of the base claims. Examiner respectfully disagrees with assertion for the reasons mentioned above.

8. In regards to claims 26, 27, 28 applicant has amended claim 26 to add that the backup tunnel label is on the label stack above the current tunnel label. As such Examiner has withdrawn the rejection for claims 26, 27 and 28.

9. In regards to claims 29, 30, 31 Examiner respectfully disagrees with the Applicant's argument on the patentability of the routing functionality implemented by a system that communicates via bus connections for the reasons described in the office action.

10. In regards to claims 21, 33, 34, 35 Examiner respectfully disagrees with the Applicant's argument on the patentability of the routing functionality implemented by a computer readable medium for the reasons described in the office action.

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11. Applicant's arguments, see page 18 of the Remarks section, filed 10/12/2005, with respect to the rejection of claims 7 and 14 under 35 U.S.C. 103(a) have been fully considered and they are persuasive. Examiner withdraws the rejection pertaining to claims 7 and 14.

12. Applicant's arguments, see page 18-19 of the Remarks section, filed 10/12/2005, with respect to the rejection of claims 8 and 15 under 35 U.S.C. 103(a) have been fully considered and but they are not persuasive. Applicant argues replacing labels on the label stack of a packet is entirely unlike the claimed forwarding the datagram using the new common tunnel label by using the VC labels in the label table and the new common tunnel label in the GID table which reroutes a datagram without any alteration of the datagram. However, examiner respectfully disagrees with this assertion. The present claim language is broad and in view of the broadest reasonable interpretation of this language, as indicated in the previous office action, Examiner respectfully points out that in MPLS routing when packets traverse from LSR to LSR label swapping do take place. Examiner respectfully disagrees with the applicant that swapping labels from a packet is entirely unlike forwarding the datagram using the new common tunnel label by using the VC labels in the label table and the new common tunnel label in the GID table which reroutes a datagram.

13. Applicant's arguments see page 19-20 of the Remarks section, filed 10/12/2005, with respect to the rejection of claims 9, 10, 11, 17, 18, 19, 22 and 23 under 35 U.S.C. 103(a) have been fully considered and but they are not persuasive. Applicant argues Cao discloses a label information base and nothing in the base indicates a different backup tunnel label that is used when indicator is set. Examiner respectfully disagrees, as Cao teaches (column 9 lines 55-66 and column 10 lines 59-65) that label information base includes an ERLSP ID, which provides a

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unique ID for the associated flow, an incoming label, forwarding equivalence class identifier, outgoing label, next hop, outgoing interface and protection status are also included. The protection status may take on a value of 0, 1, 2, or 3, respectively corresponding to "unprotected", "protected", "active", and "backup". If the ERLSP was protected, the LSRS will change the protection status of the ERLSP from 1 to 0. That is, at this stage, the protected flow, also referred to as the backup or secondary flow, is used as the active flow. As such it is inherent that any change of flow will require a different label being used.

Claim Rejections - 35 USC § 103

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 1, 2, 3, 5, 12, 20, 21, 24, 25, 29, 30, 31, 33, 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hama (US PAT PUB 2004/0202171), in view of Thang et al. (US PAT PUB 2002/0167898), hereinafter referred to as Thang, and in view of Klevans (US PAT 6885677).

In regards to claims 1, 2, 3, 21, 25, 29, 30, 31, 33, 34 and 35 Hama teaches a method of switching a label switch path (LSP) (page 2 section 0015, an LSP (Label Switched Path) is set up) and an apparatus in a multiprotocol label switching (MPLS) network (page 5 section 0070, a mixed network composed of VLANs and an MPLS network), comprising: mapping one or more virtual circuit (VC) Labels associated with a first tunnel Label to a first group identification (GID); mapping the first GID with the first tunnel Label, remapping the the first GID with a second tunnel label and having a datagram having a VC label associated with first tunnel label (page 5 section 0073 and 0074, the subrouter refers to table to find the VPN identifier (VPN label) corresponding to the VID contained in the tag. The subrouter further finds the receive-side edge router based upon the destination address contained in the packet and finds the forwarding label, which has been stored in correspondence with the IP address of this edge router, from the MPLS network routing table. If the label is found, the subrouter inserts (swaps) the VPN label and the forwarding label in place of the tag of the packet and sends the MPLS packet to the MPLS network.). In regards to claim 5, 12, 20 and 24, a method and an apparatus of maintaining tunnel Labels by a label switch router (LSR), the method comprising: forming a label table that maps virtual circuit (VC) Labels (column 7 section 87, VPN label) to group identifications (GIDs) (column 7 section 87, VID), each of the VC Labels that was previously mapped to a same

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tunnel label (column 7 section 87, VPN label) being mapped to a same group identification; forming a GID table that maps each of the different GIDs to a different tunnel label (column 7 section 87, VPN label) that identifies an adjacent LSR; and forwarding a datagrams using a VC label associated with the datagram to determine a GID for the datagram from the VC Labels in the Label table and using the determined GID to determine a tunnel label (column 7 section 87, VPN label) for the datagram from the tunnel Labels (column 7 section 87, VPN label) in the GID table is anticipated by (column 7 section 87) the processing steps of a VLAN packet (see FIG. 20) entering the router as an input. A VPN label processor finds the VPN identifier (VPN label), which corresponds to the VID contained in the tag, from the VPN label table. Further, on the basis of the destination MAC address contained in the VLAN packet, a routing table processor obtains the loopback address of the output-side edge router from the L2 VPN routing table and then finds the forwarding label (push label), which corresponds to the above-mentioned loopback address (IP address), from the forwarding label table. If the VPN label and push label have been found, the subrouter swaps the VPN label and forwarding label for the tag to generate an MPLS packet, as shown in FIG. 3, and sends this MPLS packet to the MPLS network via the line card.

Hama does not teach in regards to claims 1, 3, 21, 25, 31 and 35 forwarding a datagram having a vc label associated with the first tunnel label using a second tunnel label instead of the first tunnel label.

Thang teaches in regards to claims 1, 3, 21, 25, 31 and 35 in page 11 section 0227, the ABR having knowledge of two failures, (one in each connected area), it must first remove the attached label and swap it with a label from the other restoration table. In regards to claim 28, in section 0229 of page 11 Thang teaches that MPLS fault localization would require few changes.

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The first change is that all MPLS enabled nodes be able to attach labels to any data that arrives for the purpose of restoration. In this way, the fault need not be propagated to the ingress and egress nodes, but just to those nodes local to the fault. So the next node to the faulted node will process packets in a normal way.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Hama's teaching by adding label swapping capability during link errors as taught by Thang. The motivation is that it is known in the art to apply automatic protection switching scheme (replacing failed LSP label with a new working LSP label) for network reliability in a MPLS network.

In regards to claims 1, 2, 3, 5, 12, 20, 21, 24, 25, 29, 30, 31, 33, 34 and 35 Hama in view of Thang teaches a label swapping technique as described above.

In regards to claims 1, 2, 3, 5, 12, 20, 21, 24, 25, 29, 30, 31, 33, 34 and 35 Hama in view of Thang does not teach that such label swapping scheme is done in a LSR.

In regards to claims 1, 2, 3, 5, 12, 20, 21, 24, 25, 29, 30, 31, 33, 34 and 35 Klevans teach of a network device (column 6 lines 55-56 and figure 8), the device being an endpoint in some paths and a core router in others.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Hama in view of Thang's teaching to combine the teachings of Klevans of a device which has a functionality to operate as endpoint LER or core router LSR. The motivation is that (as suggested by Klevans, column 1 lines 55-56 and column 5 lines 31-39) such functionality would enable one to implement a MPLS label switched router with

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inexpensive communications device which should be able to make, namely, ingress, egress and core. An ingress connection takes a non-MPLS packet stream, assigns it an MPLS compliant label and forwards it within the MPLS domain. An egress connection receives an MPLS packet and forwards to a node outside the MPLS domain. Finally, a core connection (or a forwarding connection) forwards an MPLS packet within the MPLS domain.

In regards to claim 12, 13 and 16, it is known in the art that such routing functionality in a system are implemented by a computer readable medium storing thereon sequences of instructions which are executable by a system.

In regards to claim 20, Hama's teaching shows a router having a processor coupled to a memory (page 7 section 87 and figure 9 numeral 126 and 124, a VPN label processor, a VPN label table). It is known in the art that modules internal to a system communicate via bus connections.

In regards to claims 6 and 13, Hama teaches the structure of a VPN changes from time to time by being enlarged or otherwise modified by the policy of the enterprise. This makes it necessary to update the VPN tables in conformity with the change in VPN structure. FIGS. 15A and 15B are diagrams useful in describing updating in a case where the user router communicates with another user router.

In regards to claim 2, 30 and 34 Hama teaches a VID label being associated with forwarding label.

In regards to claim 29, 30 and 31 Hama's teaching shows a router having a processor coupled to a memory (page 7 section 87 and figure 9 numeral 126 and 124, a VPN label

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processor, a VPN label table). It is known in the art that modules internal to a system communicate via bus connections.

In regards to claims 21, 33, 34 and 35 it is known in the art that routing functionality in a system are implemented by a computer readable medium storing thereon sequences of instructions, which are executable, by a system.

17. Claims 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hama (US PAT PUB 2004/0202171),), in view of Thang et al. (US PAT PUB 2002/0167898), hereinafter referred to as Thang, in view of Klevans (US PAT 6885677) and in view of Paatela et al. (US PAT PUB 2002/0163935), hereinafter referred to as Paatela.

In regards to claims 8 and 15 Hama in view of Thang, in view of Klevans' teaches of routing packets using labels as described in the rejections of claims 5 and 12.

In regards to claims 8 and 15, Hama in view of Thang, in view of Klevans' does not teach of using updated label to forward packets.

In regards to claims 8 and 15, Paatels teaches MPLS uses a stack of 32-bit labels, and a router will view the top label in the stack to determine what the next hop should be. Each router in the MPLS domain can modify the label stack, such as by adding more labels based on the router's knowledge of the packet forwarding conditions. For example, such a modification may require replacing the existing top label on the label stack with a new label so that a particular router can change one or more of the next hops.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Hama in view of Thang, in view of Klevans' teaching by incorporating the steps of using updated label for routing during routing change. The motivation is that link can go down any moment of time and the labels need to be updated to reroute the packets. Then the updated label has to be used to forward the packet.

18. Claims 9, 10, 11, 17, 18, 19, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hama (US PAT PUB 2004/0202171),), in view of Thang et al. (US PAT PUB 2002/0167898), hereinafter referred to as Thang, in view of Klevans (US PAT 6885677) and in view of Cao et al. (US 6721269), hereinafter referred to as Cao.

In regards to claims 9, 10, 11, 17, 18, 19, 22 and 23, Hama in view of Thang, in view of Klevans' teaches of routing packets using labels as described in the rejections of claims 5 and 12.

In regards to claims 9, 10, 11, 17, 18, 19, 22 and 23, Hama in view of Thang, in view of Klevans' does not teach of using an indicator telling the router to use backup label for routing during link error.

In regards to claims 9, 10, 11, 17, 18, 19, 22 and 23, Cao teaches (column 9 lines 55-66 and column 10 lines 59-65) that label information base includes an ERLSP ID, which provides a unique ID for the associated flow, an incoming label, forwarding equivalence class identifier, outgoing label, next hop, outgoing interface and protection status are also included. The protection status may take on a value of 0, 1, 2, or 3, respectively

corresponding to "unprotected", "protected", "active", and "backup". If the ERLSP was protected, the LSRS will change the protection status of the ERLSP from 1 to 0. That is, at this stage, the protected flow, also referred to as the backup or secondary flow, is used as the active flow. At the ingress router, also referred to as a source node, the egress node, will determine whether the failed ERLSP is protected. If it is protected, the LSR will change the protection status of the failed ERLSP from 3 to 0. By modifying the protection status, changing the protection status of the ERLSP from "backup" to "unprotected", the egress LSR completes the hardware protection switching, i.e. it will work as a normal node in processing packets.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Hama in view of Thang, in view of Klevans' teaching by incorporating protection status column in label tables as taught by Cao. The motivation is that in a packet-processing environment, if a link is down, it is not required to re-calculate and updated routing info for every packet. Instead, an indication should be set and subsequently used to route packets without doing path re-calculation.

Allowable Subject Matter

19. Claims 4, 7, 14, 26, 27, 28, 32 and 36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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20. Prior arts pertinent to the application but not used in the office action:

- Method of and apparatus for fast alternate-path rerouting of labeled data packets normally routed over a predetermined primary label switched path upon failure or congestion in the primary path Haskin et al. US 6813242
- Path rerouting mechanism utilizing multiple link bandwidth allocations Shabtay et al. US 6895441
- Method of managing hop-count in label switching network Katsume et al. US 6501756
- Label switched communication network, a method of conditioning the network and a method of data transmission Carpin et al. US 20030043792
- Online distributed path routing method and system Su et al. US 6850705
- Method for high speed rerouting in multi protocol label switching network Lee et al. US 6904018
- Network data routing protection cycles for automatic protection switching Andersso et al. US 20030152025

- Link-level protection of traffic in a packet-switched network Wang et al. US 6901048
- Constraint-based route selection using biased cost Hsu US 6363319
- Failure protection in a communications network Weil et al. US 20020093954

Conclusion

21. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Salman Ahmed whose telephone number is (571)272-8307. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571)272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Salman Ahmed
Examiner
Art Unit 2666

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